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SMITH-HILL AND BEDELL  
12670 N W BARNES ROAD  
SUITE 104  
PORTLAND, OR 97229

EXAMINER

LUU, THANH X

ART UNIT PAPER NUMBER

2878

DATE MAILED: 08/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/811,059

Applicant(s)

PROBST, MARKUS

Examiner

Thanh X Luu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 16 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 15-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 15-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

### **DETAILED ACTION**

This Office Action is in response to preliminary amendments filed July 16, 2001.  
Claims 1, 2 and 15-26 are currently pending.

#### ***Specification***

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
2. The disclosure is objected to because of the following informalities: Applicant does not describe or refer to Figure 5 in the description of the invention.

Appropriate correction is required.

#### ***Claim Objections***

3. Claims 24 and 25 are objected to because of the following informalities:  
In claim 24, "that are connect to one another" is grammatically incorrect.  
Examiner recommends using the term --connected--.

In claim 25, "deflection elements (8) and (9)" should be --deflection elements (8 and 9)--, otherwise the claim would end with the word "and" and be incomplete.

Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 1, 2 and 15-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, the phrase "for example" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Further, "the emitted beam" and "the scattered beam" lacks proper antecedent basis. Also, it is unclear in its given context what "toward the perpendicular" means. That is, since no reference frame is given with respect to the term "perpendicular" it is unclear what angle or direction is being referred to. Lastly, it is unclear in its given context how the scattered beam (a beam from the fluid) is directed by the deflection element onto the separator when the deflection element is between the separator and the detector.

Regarding claim 17, "the center beam" and "the interior of the deflection element" lacks proper antecedent basis.

Regarding claim 18, "the beams" and "the surface" lacks proper antecedent basis.

Regarding claim 19, "the angle of incidence" and "the material" lacks proper antecedent basis. Further, it is unclear in its given context what material and what angle of incidence are being referred to.

Regarding claim 21, "the incident scattered beam" lacks proper antecedent basis. Further, it is unclear in its given context what the emitted beam or incident scattered beams are parallel to.

Regarding claim 26, "receiver", "the optical components" and "the light paths" lacks proper antecedent basis.

Claims 2, 15, 16, 20 and 22-25 are indefinite by virtue of their dependency on an indefinite claim.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 2, 15, 17, 21 and 23-25, as understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Endo et al. (U.S. Patent 4,725,148).

Regarding claims 1, 2, 15, 17, 21 and 23-25, Endo et al. disclose (see Figure 1) an apparatus for performing scattered radiation measurements (see column 3, line 53) in fluids, comprising a sender (1) to directly emit radiation into the fluid (8), a detector (3) to measure scattered radiation in the fluid (see column 3, line 53), at least one separator (7 or 9) that is located between the fluid and the sender or detector and that allows the radiation to pass through it, wherein, at least one optical deflection element (6 or 10) is provided between the sender and the separator and/or between the detector and the separator, in order to deflect the emitted radiation toward a perpendicular (perpendicular with respect to the separator) onto the separator. Further, Endo et al. disclose (see Figure 1) a first deflection element (6) is provided between the sender (1) and the separator (7 or 9), and a second deflector element (10) is provided between the separator (7 or 9) and the detector (3). Endo et al. further disclose (see Figure 1 and column 3, lines 41-43) the deflection element (6 or 10) is comprised of a reflecting

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through it, wherein, at least one optical deflection element (11 or 12 or 18) is provided between the sender and the separator and/or between the detector and the separator, in order to deflect the emitted radiation toward a perpendicular (a 90 degree deflection) onto the separator. Albert further discloses (see Figure 1) the sender, the detector and the deflection elements lie in the same plane (plane of the paper) and crossing light paths (near 16 or within 2).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Endo et al.

Regarding claim 22, Endo et al. disclose (see Figure 1) the surfaces of the optical deflection element (6 or 10) are comprised of flat surfaces. Endo et al. do not specifically disclose the surfaces are also comprised of circular cylindrical surfaces. However, Endo et al. also teach (see column 8, line 65) that the optical deflection element may be made of an optical fiber. Optical fibers are round and have circular cylindrical surfaces and flat end surfaces. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a fiber having circular cylindrical and flat surfaces as the optical deflection element of Endo et al. to

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reduce costs by providing a cheaper alternative to prisms. Furthermore, since fibers are flexible, it would also provide a more durable probe.

11. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Endo et al. in view of Sakata (U.S. Patent 6,166,764).

Regarding claim 19, Endo et al. disclose (see Figure 1 and column 3, line 43) a reflection mirror as the deflection surface. Endo et al. do not specifically disclose a total reflection at the deflection surface by selecting an angle of incidence of the incident radiation and a material of the deflection surface. Sakata teaches (see column 9, lines 35-50) total reflection is dependent on the angle of incidence and a material of the element. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide total reflection at the deflection surface of Endo et al. by selecting an appropriate angle of incidence and material to reduce radiation losses at the deflection surface and obtain improved detection.

12. Claims 16, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endo et al. in view of Aose et al. (U.S. Patent 5,838,843)

Regarding claim 16, Endo et al. disclose (see Figure 1) the reflecting prism (6 or 10) has a radiation entry or exit surface which is configured as a flat surface. Endo et al. do not specifically disclose the entry or exit surface as a nonplanar aspherical surface. Aose et al. teach (see Figure 4) a deflection element (7) having a radiation entry or exit surface (at 6) that is a nonplanar aspherical surface. Thus, Aose et al. recognize that radiation can be better coupled to an output with an aspherical surface. It would have been obvious to a person of ordinary skill in the art at the time the

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prism. Endo et al. also disclose (see Figure 1) the optical deflection element (6 or 10) has an entry surface or exit surface that is disposed in such a way that radiation enters or exits perpendicularly and a deflection surface (slanted part of 11 and 12) that is disposed in such a way that the radiation is reflected in an interior of the deflection element. In addition, Endo et al. disclose (see Figure 1) the deflection element (6 or 10) is provided in such a way such that the emitted radiation and a scattered beam are aligned and deflected in a parallel direction. Endo et al. also disclose (see Figure 1) the surfaces of the optical deflection elements are comprised of flat surfaces. Endo et al. further disclose (see Figure 1) the optical deflection element (6 or 10) is disposed directly on the separator (7 or 9). Endo et al. also disclose (see Figure 1) the optical deflection elements (6 and 10) and the separator (7 or 9) are configured as units that are connected to one another. Lastly, Endo et al. disclose (see Figure 1) the sender (1) and the detector (3) are not disposed in the same plane as the optical deflection elements (6 and 10). That is, the sender and the detector are in a different horizontal plane than the deflection elements.

8. Claims 1 and 26, as understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Albert (U.S. Patent 3,506,360).

Regarding claims 1 and 26, Albert discloses (see Figure 1) an apparatus for performing scattered radiation measurements (Tyndall effect) in fluids, comprising a sender (7) to directly emit radiation into the fluid (within 2), a detector (16 or 17) to measure scattered radiation in the fluid, at least one separator (3-6) that is located between the fluid and the sender or detector and that allows the radiation to pass



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invention was made to provide a reflecting prism with a nonplanar aspherical surface in the apparatus of Endo et al. in view of Aose et al. to provide better detection through better coupling of the radiation from the sender or to the detector.

Regarding claim 18, Endo et al. disclose (see Figure 1) the radiation entering or leaving the entry or exit surface of the optical deflection element travel in the deflection element parallel to an optical axis. Endo et al. do not specifically disclose the surfaces being curved. Aose et al. teach (see Figure 4) a deflection element (7) having a radiation entry or exit surface (at 6) that is curved. Thus, Aose et al. recognize that radiation can be better coupled to an output with a curved surface. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide an optical deflection element with a curved surface in the apparatus of Endo et al. in view of Aose et al. to provide better detection through better coupling of the radiation from the sender or to the detector.

Regarding claim 20, Endo et al. disclose (see Figure 1) the reflecting prism (6 or 10) has a radiation entry or exit surface which is configured as a flat surface. Endo et al. do not specifically disclose the entry or exit surface as a spherical surface. Aose et al. teach (see Figure 4) a deflection element (7) having a radiation entry or exit surface (at 6) that is an aspherical surface. However, choosing between aspherical and spherical surfaces would require only routine skill in the art. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a spherical entry or exit surface in the apparatus of Endo et al. in view of Aose et al. to focus the radiation at a desired point.

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***Conclusion***

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh X. Luu whose telephone number is (703) 305-0539. The examiner can normally be reached on Monday-Friday from 6:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font, can be reached on (703) 308-4881. The fax phone number for the organization where the application or proceeding is assigned is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

txl  
August 9, 2002



Thanh X. Luu  
Patent Examiner